REMARKS/ARGUMENTS

The action by the Examiner of this application, together with the cited references, have been given careful consideration. Following such consideration, claims 1, 5-7, 9, 12, 14-16, 18, 21, 23-24, 26, 29, 31-32, and 34 have been amended to define more clearly the patentable invention applicant believes is disclosed herein. Moreover, claims 4, 8, 10-11, 13, 17, 19-20, 22, 25, 27-28, 30, 33, and 35-36 have been canceled. Claims 2-3 are unchanged by the present amendment paper. It is respectfully requested that the Examiner reconsider the claims in their present form, together with the following comments, and allow the application.

The Examiner has provisionally rejected claims 21-26 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 16-21 and 24 of copending Application Serial No. 10/389,036. Claims 29-34 have also been provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 16-21 and 24 of copending Application Serial No. 10/389,036, in view of U.S. Patent No. 4,158,810 to Leskovar. To overcome the double patenting rejections of claims 21-26 and 29-34, the applicant submits herewith a Terminal Disclaimer. Accordingly, it is respectfully submitted that the Examiner withdraw the double patenting rejection.

The Examiner has rejected claims 1-3, 8-11, 21, and 25-28 as being obvious in view of U.S. Patent No. 3,816,811 to Cmelik K. Furthermore, claims 12, 17-20, 29, and 33-36 have been rejected as being obvious in view of the combined teachings of Cmelik K. and U.S. Patent No. 4,158,810 to Leskovar; claims 4-7 and 22-24 have been rejected as being obvious in view of the combined teachings of Cmelik K. and U.S. Patent Publication No. 2002/0014410 to Silveri et al.; and claims 13-16 and 30-32 have been rejected as being obvious in view of the combined teachings of Cmelik K., Leskovar, and Silveri et al.

It is respectfully submitted that none of the cited references, taken individually or in combination, teaches or suggests the applicant's invention as defined by the present claims.

Independent claim 1 now recites:

> *A chemical concentration measuring system used in a biocontamination deactivation apparatus having a vaporizer that receives a feed stream comprised of a fluid having hydrogen peroxide and at least one chemical component, wherein the*

chemical concentration measuring system determines the concentration of the hydrogen peroxide in the fluid, the system comprising:

sensing means responsive to changes in the concentration of the hydrogen peroxide in the fluid, the sensing means including a capacitive voltage divider circuit including:

(a) a first capacitor having first and second conductors exposed to the fluid, said fluid comprising a dielectric therebetween, and

(b) a second capacitor;

an alternating current (AC) voltage generator for applying an AC voltage to the capacitive voltage divider circuit;

a memory for storing a table of data including capacitance values and corresponding concentration values indicative of the relative concentration of hydrogen peroxide in the fluid; and

processing means for measuring a voltage across the second capacitor to determine a capacitance value associated with the first capacitor, and *determining the concentration of the hydrogen peroxide in the fluid using the determined capacitance value and the table of data stored in the memory.*

Independent claim 12 now recites:

A chemical concentration measuring system used in a biocontamination deactivation apparatus having a vaporizer that receives a feed stream comprised of a fluid having hydrogen peroxide and at least one chemical component, wherein the chemical concentration measuring system determines the concentration of the hydrogen peroxide in the fluid, the system comprising:

sensing means responsive to changes in the concentration of the hydrogen peroxide in the fluid, the sensing means including a resistive voltage divider circuit including:

(a) a first resistor including first and second conductors exposed to the fluid, said fluid comprising a resistive element of the first resistor, and

(b) a second resistor;

a memory for storing a table of data including resistance values and corresponding concentration values indicative of the relative concentration of hydrogen peroxide in the fluid;

an alternating current (AC) voltage generator for applying an AC voltage to the resistive voltage divider circuit; and

processing means for measuring a voltage across the second resistor to determine a resistance value associated with the first resistor, and *determining the concentration of the hydrogen*

peroxide in the fluid using the determined resistance value and the table of data stored in the memory.

Independent claim 21 now recites:

A method for determining a concentration of hydrogen peroxide in a feed stream received by a vaporizer for a biocontamination deactivation apparatus, wherein the feed stream is comprised of a fluid having hydrogen peroxide and at least one chemical component, the method comprising:

exposing a capacitor, of a capacitive voltage divider circuit, to the fluid, wherein said fluid comprises a dielectric between first and second conductors of the capacitor, said capacitor having an associated voltage that varies according to the concentration of the hydrogen peroxide in the fluid;

pre-storing data in a memory, including capacitance values associated with the capacitor and corresponding concentration values that are indicative of the concentration of the hydrogen peroxide in the fluid;

measuring the associated voltage;

determining a capacitance value associated with the capacitor using the measured associated voltage; and

accessing said pre-stored data using the capacitance value *to determine the relative concentration of the hydrogen peroxide in the fluid.*

Independent claim 29 now recites:

A method for determining a concentration of hydrogen peroxide in a feed stream received by a vaporizer for a biocontamination deactivation apparatus, wherein the feed stream is comprised of a fluid having hydrogen peroxide and at least one chemical component, the method comprising:

exposing a resistor, of a resistive voltage divider circuit, to the fluid, wherein said fluid comprises a resistive element of the resistor between first and second conductors of the resistor, said resistor having an associated voltage that varies according to the concentration of the hydrogen peroxide in the fluid;

pre-storing data in a memory, including resistance values associated with the resistor and corresponding concentration values that are indicative of the concentration of the hydrogen peroxide in the fluid;

measuring the associated voltage;

determining a resistance value associated with the resistor using the measured associated voltage; and

accessing said pre-stored data using the resistance value *to determine the relative concentration of the hydrogen peroxide in the fluid.*

The present invention, as defined by independent claims 1, 12, 21 and 29 relates to a method and apparatus for determining the concentration of *hydrogen peroxide in a feed stream received by a vaporizer* for a biocontamination deactivation apparatus, wherein the feed stream is comprised of hydrogen peroxide and at least one chemical component. In contrast, Cmelik K. discloses a capacitive sensing device used for ascertaining *water content of a petroleum flow in a well-pipeline* (i.e., the proportion of water contained in a petroleum extraction). Therefore, the claimed invention as defined by independent claims 1, 12, 21 and 29 applies to a significantly different application than Cmelik's device.

The Examiner further acknowledges that "Cmelik does not specifically disclose a memory for storing a table of data including capacitance values and corresponding concentration values indicative of the relative concentration of hydrogen peroxide in the fluid; obtaining a relative concentration from a table; interpolate or extrapolate a relative concentration using the table; or normalizes said relative concentration to provide an absolute concentration of the chemical in the fluid." Accordingly, the Examiner argues that "the use of a lookup table stored in a memory; the method of interpolating or extrapolating a value using the lookup table; and the method of normalizing a value are well known in the art as evidenced in Silveri et al."

Silveri et al. discloses a control system that employs amperometric sensing to measure a bromine concentration in spa water and uses the measurement to control electrochemical production of bromine through the oxidation of aqueous bromide. However, nowhere does Silveri et al. teach or suggest measuring the concentration of *hydrogen peroxide in a fluid.* Furthermore, Silveri's sensor probe 6 does not include a capacitor voltage divider, but instead includes three sensor probe electrodes, namely a working electrode 150, a counter (or auxiliary) electrode 152 and a reference electrode 154 (see paragraph [0122]).

It is respectfully submitted that there is no teaching or suggestion to apply aspects of Silveri's control system to that of the control system taught by Cmelik K. In this respect, the control system disclosed in Silveri et al. functions to measure *bromine concentration* in spa water, while the sensor device disclosed in Cmelik K. functions to determine a *water-to-oil ratio*

of a petroleum fluid flowing in a well pipeline. Accordingly, it is respectfully submitted that there is a lack of motivation or suggestion to one skilled in the art to combine selected features of Silveri's sensor device with Cmelik's sensor device.

The Examiner also acknowledges that "Cmelik does not specifically disclose a resistive voltage divider circuit." Accordingly, the Examiner relies upon Leskovar for the teaching that it is well known in the art to use a capacitive and a resistive voltage divider interchangeably. However, it is respectfully submitted that Leskovar also fails to teach a sensing device for *sensing hydrogen peroxide concentration in a vaporizer feed stream*, as defined by independent claims 1, 12, 21, and 29.

The remaining claims depend from independent claims 1, 12, 21 and 29. Thus, these claims are likewise patentable over the cited references for at least the reasons discussed above in connection with the claims 1, 12, 21 and 29.

In view of the foregoing, it is respectfully submitted that the present application is now in proper condition for allowance. If the Examiner believes there are any further matters that need to be discussed in order to expedite the prosecution of the present application, the Examiner is invited to contact the undersigned.

It should be noted that an additional **Information Disclosure Statement** was filed for the present application on **January 11, 2005**. The Examiner is respectfully requested to consider the references cited in the Information Disclosure Statement, and provide the applicant with acknowledgement thereof.

If there are any fees necessitated by the foregoing communication, please charge such fees to our Deposit Account No. 50-0537, referencing our Docket No. ST8676US.CIP.

Respectfully submitted,

Date: **February 1, 2005**

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I hereby certify that this correspondence (along with any paper referenced as being attached or enclosed) is being deposited on the below date with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Date: **February 1, 2005**

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